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Contrib to CMC

Effects of Escalation on the North Vietnam Economy

I. Remaining Targets in North Vietnam

Table 1 lists 79 JCS targets plus 7 other significant targets which have either not been struck or struck with negligible damage through March 1967. Important industrial targets have only recently come under attack. Although the Thai Nguyen Iron and Steel Complex was bombed repeatedly in March, the Hanoi Machine Tool Plant, Viet Tri Chemical Plant, Haiphong Cement Plant, and other important fertilizer, textile, coal processing, and food processing facilities remain unattacked. However, attacks on four thermal power plants in February and March of this year left only three major thermal power sources -- all in Hanoi and Haiphong -- undamaged in North Vietnam.

Only 45 percent of the JCS targeted bridge capacity has been destroyed (excluding bypasses); many of the uninterdicted bridges are located on the important Hanoi-Lao Cai and Hanoi-Dong Dang Rail Lines, and on roads leading toward Hanoi from the China border. ^{None} ~~All~~ of North Vietnam's major jet airfields have ~~not~~ been struck. Less than one quarter of rail yard, railroad shop, canal lock, maritime port, and critical communication facility capacity has been interdicted. In addition, significant shares of military supply and ordnance depot~~s~~, barracks, naval base, and radar site capacity are still in operation.

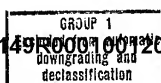
II. Economic Effects of Escalated Air Attacks

A. Destruction of Modern Industry

Destruction of modern industry in North Vietnam would not deal a crippling blow to the economy. Successful attacks upon the North Vietnamese

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industrial facilities shown in Table 1, plus additional attacks against Vietnamese power plants and the Thai Nyugen Iron and Steel Complex, would eliminate, however, the fruit of several hundred million dollars in capital investment, cut off the source of perhaps one quarter or more of the gross national product and most foreign exchange earnings, and would probably halt the construction of additional modern plants in North Vietnam by other Communist countries. It would also disrupt the functioning of other sectors of the economy through the loss of electric power and such materials as cement, some fertilizers and chemicals, add to the burden of aid from the Communist countries, and produce at least temporary displacement of the urban labor force.

Modern industry in North Vietnam -- machinery, chemical, fertilizer, cement, and electric power plants -- makes a contribution to the military capability of the Communist forces in South Vietnam and to the air defense capability in the north, but this contribution is not vital. Furthermore, the essentially agrarian nature of the economy together with numerous local and handicraft facilities, which meet about 70 percent of the population's demand for consumer goods, provides a strong buffer against bombing attacks causing a general economic collapse. The major effect of escalated attacks against industry in North Vietnam would be to place an additional burden on port and rail facilities in order to import goods formerly produced domestically.

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B. Imports Versus Rail and Port Capacities

Although the precise nature of the import program that would follow a successful attack against modern industry is uncertain -- the North Vietnamese would not have to replace some non-essential output -- it is estimated that the required level of annual imports could increase by as much as 500,000 metric tons. The estimated increase in imports is assumed to include sufficient cement, fertilizer, pig iron, machine tools, spare parts, medicines, and the like to replace essential production for domestic consumption.

Total imports by North Vietnam during 1966 are estimated to have been about 1.5 million metric tons. Daily requirements are given in the following tabulation in metric tons per day.

Dry cargo through Haiphong	2,390
Rail imports	1,150
Bulk petroleum	<u>510</u>
Total	4,110*

*Includes a small volume of imports through Hon Gai.

An additional increment of 500,000 metric tons of imports above the 1966 level -- 1,370 metric tons per day -- is within the current capacity of the rail lines (see the tabulation below) without recourse to road or sea transportation.

	<u>Metric tons per day</u>
Railroad capacity between China and Hanoi (each way per day)	3,600
Rail imports during 1966	1,150
Replacement Increment	1,370
Total	<u>2,520</u>
Unused capacity	1,080

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The port of Haiphong also has a theoretical capacity of about 4,500 metric tons of dry cargo per day. Almost all of the port's capacity could be used for imports because the availability of exports would be virtually eliminated by a successful escalation of the bombing. As shown below, imports at the level during 1966 plus the additional burden of imports resulting from the destruction of modern industry are within the port's theoretical capacity.

	<u>Metric tons per day</u>	
Haiphong Port capacity	4,500	
Imports during 1966	2,390	2830
Replacement Increment	1,370	
Total	3,760	4200
Unused capacity	740	300

An escalated level of air attacks against both the rail and highway targets listed in Table 1, if successful in interdicting the main LOC's from Communist China, however, would place a heavy burden on the port of Haiphong. Such an attack would force the North Vietnamese to shift a large portion of the 1,150 metric tons of supplies currently imported by rail to sea transportation. It is quite possible that the North Vietnamese could move imports through Haiphong at the theoretical capacity level after the initial disruption caused by the bombing with foreign guidance and additional cargo-handling equipment, although some congestion already has been noted at the port. Therefore, as much as 60 percent of the supplies currently imported by rail probably ^{could} ~~be~~ shifted to sea transportation ^{and} ~~the~~ ports would still be able to take care of normal sea imports and the replacement increment due

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to the loss of industry. The remaining imports currently moved by rail, including most military supplies, probably could be transported by truck and by rail shuttle service in spite of escalated attacks against both highways and railroads.

In order to relieve port congestion, some seaborne imports can be off-loaded from ships anchored outside the port area into barges, lighters, and other small watercraft without using the port's facilities, as is currently being done for petroleum in bulk. Some imports also can be moved from South China ports by junks and other coastal watercraft and off-loaded at several smaller ports in North Vietnam or "on the beach" like that currently being done in the southern part of the country. Thus, although a successful escalation of the bombing against LOC's would create serious problems for the North Vietnamese, it probably would not significantly restrict the normal volume of imports as long as the ports and waterways remain open. At any rate, the North Vietnamese would have little difficulty importing all essential economic and military supplies.

C. Further Escalation: Mines and Airfields

A successful escalation of air attacks in conjunction with an effective mining program would place a much greater restriction on the North Vietnamese economy than escalated bombing by itself. Such a program would be especially effective if, in addition to the ports, coastal and inland waterways were mined. The vulnerability of railroad rolling stock, trucks, and watercraft, the difficulties of maintaining lines of communication, and the cost and

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unreliability of transportation would all increase significantly. Some import programs would almost certainly have to be reduced and some reduction in the desired levels of supplies would take place. These problems alone would not be sufficient, however, to degrade meaningfully the flow of vital economic supplies or essential military materials, and would not prevent North Vietnam's continued support of the war in the South. The volume of essential economic and military supplies is relatively small and North Vietnam could continue to move this reduced flow on highways and rail lines in spite of escalated air attacks.

Air attacks against North Vietnam's remaining airfields, see Table 2, would blunt the country's air defense capability but would have no serious effect on the flow of supplies. Air transportation in North Vietnam has always been negligible compared to other forms of transportation. The most significant effect would be to restrict the USSR or China from providing an airlift of priority supplies.

Escalated attacks against the remaining unstruck barracks and military storage depots listed in Table 1 would probably be of no great significance because dispersion of these facilities could be increased without serious difficulty.

D. Manpower Requirements

At present about 220,000 full-time and 100,000 to 200,000 part-time workers have been diverted to repair, reconstruction, dispersal, and transport programs. Of these the tabulation below shows the estimated number of

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workers directly engaged in road and rail construction, maintenance, and repair.

	<u>South of Hanoi</u>	<u>North of Hanoi</u>	<u>Total</u>
North Vietnamese	63,000	9,000	72,000
Chinese	0	22,000-34,000	<u>22,000-34,000</u>
Total			94,000-106,000

An intensive interdiction of the main rail lines and highways in the areas north of Hanoi would force the Communists to allocate considerable manpower to maintain the rail lines and alternative highway routes. Although it is extremely difficult to interdict road systems, their greater use would increase the opportunities for harassment of actual traffic movement.

If the present level of air strikes is doubled and an increasing share of the attacks are concentrated against the transportation system north of Hanoi, it is estimated that an additional 40,000 North Vietnamese and 13,000 to 16,000 Chinese would be required for repair and maintenance operations.

It is probable that a major escalation in air attacks against the LOC's in the north would result in more Chinese construction troops being assigned to North Vietnam. At present a division of labor already exists with North Vietnamese labor repairing the main LOC's in southern North Vietnam and Chinese construction troops being largely responsible for the repair and maintenance of the main rail lines north of Hanoi. The increased use of Chinese troops would not be the result of any overall manpower shortage in North Vietnam but would result from the increased efficiency that could be attained by using experienced railroad engineering units.

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Assuming that North Vietnam's modern industry suffered only light to moderate damage from air attacks an additional 10,000 to 25,000 persons, including several thousand technicians from other Communist countries, would be necessary for repair activities. On the other hand, if modern industry is heavily damaged then industrial repairs would probably be postponed indefinitely.

III. Ability to Accomodate

While severe damage to the modern industrial sector and an accelerated interdiction of the rail and road systems would place additional pressure on Hanoi, the burden would not be heavy enough to make the regime negotiate. If in addition the ports are successfully interdicted the North Vietnam leadership would have cause for serious concern. Their reaction would depend on the effectiveness of the total US program to interdict war and essential economic supplies flowing into North Vietnam.

It would seem certain that Hanoi would continue its attempts to circumscribe the effectiveness of the interdiction and raise the price, in terms of aircraft and pilots, that the US would have to pay to achieve and maintain a significant level of interdiction. In the face of heavy air strikes during the past two years, the North Vietnamese have constructed an average of two by-passes around all important bridges and as many as four or five by-passes around critical choke-point bridges. In many areas the intensity of air strikes would have to be increased by at least three times just to destroy the existing by-passes. In some respects, the North Vietnamese are in a better position today after two years of bombing to maintain logistical

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flows than after the first year of bombing.

To further reduce the effectiveness of interdiction the regime could cut back on imports of fertilizers, cement, and other non-essential goods to ease the task of importing war and war supporting supplies. In addition, without a modern industry to support and with the elimination of exports, the transportation sector of the economy would be primarily concerned with importing and distributing the relatively small volume of essential military and economic goods. It is questionable if the interdiction of supplies into North Vietnam can ever be so complete and continuous to reduce the volume below the threshold needed to continue the war.

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